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## ABSTRACT

A compact device (20) for non-invasively monitoring concentration levels of blood constituents, including glucose, cholesterol, alcohol, blood gases and various ions. The device includes a finger receptor (140) having a channel for receiving a finger of a user. The channel has a light entrance and a light exit so that light can be passed from a light source (91) through a finger located in the channel in a direction generally normal to the finger. Certain heat generating components, including a stable power supply for the device, are external to the device housing so as to reduce heat generation and thereby increase stability of the device. The device includes a communications interface for interacting with a computer. The device can be used for clinical use or for home use and the memory of the computer can be used to assist with record keeping and with dosage calculations.